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Youngstown sheet & tube co. Safety first

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Safety and Welfare Work as carried on by The Youngstown Sheet & Tube Co., Youngstown, O.*

Largely a Matter of Education of the Average Workman---A Review of the Progressive Stages Through Which the Movement has Passed

By JAMES M. WOLTZ, Safety Director

Early safety methods were for the most part haphazard in their application, due to the fact that in the ordinary plant they were left in the hands of individual foremen or persons locally in charge, with very little or no systematic central direction or supervision. However, the agitation of mill and railroad officials, the passing of laws, the creation of industrial commissions and the demands of workmen themselves, eventually resulted in the formation of safety organizations in plants and on railroads. With this came a desire to improve conditions then existing, and amongst the pioneers in establishing a "Safety Department," was the company with which the writer is connected. As an instance it may be cited that the first specially constructed "mill motors" for individual drive of steel mill machinery were built from plans and suggestions submitted by its electrical department. Prior to this time, it is true, there had been in use in some of the mills a few converted street-car type motors, but never before had a specially constructed mill motor been asked for and installed in a plant.

The adoption of the individual mill-motor was, in itself, an epoch in the electrical manufacturing world and, to the industrial world it was a blessing whose coming had long been awaited. Its adoption did away with long lines of shafting with their pulleys, belts and the numberless dangers connected with their

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* A general review of the Safety work at the plants of the Youngstown Sheet & Tube Company, printed originally in the August "Electric Journal," Pittsburgh. Text and illustrations by permission of "Electric Journal."

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use, not the least of which was the constant agitation of air in the mills and shops, which was the cause of at least two occupational diseases.

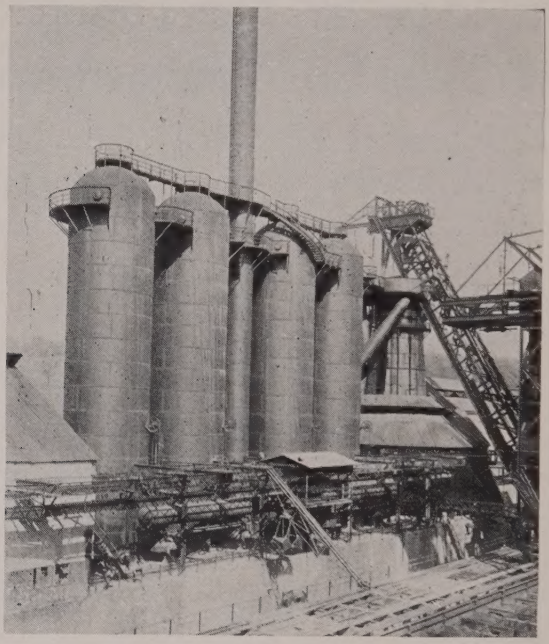


Fig. 1.—Blast Furnace "D," provided with guard rails on walks, platforms, skip hoists, etc.

The Beginning of the System.

As was but natural, the duties of investigating accidents and adjustment of claims for injuries made those who were connected with the accident department particularly familiar with the causes of accidents, and it was possible in many cases for them to recommend means for their reduction. Accordingly it was but a natural result that a consolidation should take place between the accident and safety departments. Prior to this time committees of employes were largely the ones who looked after safety work, and these assisted the accident department in its efforts to call attention to dangerous places and protect its workmen. The Company maintained these safety committees, composed of such employes as department superintendents, assistant superintendents, and foremen. These committees were

appointed from time to time, and served until a new committee was appointed to relieve them. They were expected to visit all the departments in the various plants and make their recommendations direct to the general superintendent, who in turn took up the matters as they affected the various departments, through the department superintendents. The committee recommendations covered the whole range of irregular and dangerous work practices, dangerous machinery, unprotected gears, fire hazards, sanitary conditions and the general welfare of the employes.

Fig. 2.—Protection of third rail on the ore bins for use of larry-car.

That this Company had made considerable progress in safety work as early as 1911, is attested by the fact that it was awarded a gold medal at the International Exposition of Hygiene and Safety, held at Dresden, Germany, in that year. This medal was awarded for an exhibit of drawings, photographs, models of safety devices and danger signs which were sent abroad espe-

cially for this exposition. That this was no empty honor will be readily recognized when it is recalled that the safety movement at that time was little more than a germ in this country. In the United States only a few of the largest manufacturing and railroad corporations had begun to realize the importance and necessity of accident prevention work. What little had been done had come about from a careful study of the array of figures and the results of the campaign for reduction of accidents that had been carried on in most of the continental countries of Europe, where the conservation of life and limb was already a matter of grave concern with many of the governments.

The Complete "Safety First" Organization.

The rapid growth of The Youngstown Sheet & Tube Company necessitated the erection of many large buildings equipped with modern iron and steel making machinery. These extensions called for the employment of a small army of workmen, and the safety work had grown to such an extent that it was thought advisable to organize a separate safety department which was placed in charge of the safe operation and installation of machinery, the supervision of work practices, sanitation, welfare, fire and police protection. This department has at its head a safety director, who is assisted by two safety inspectors, both of the latter being practical mill men, having received their training in the iron and steel business in the mills of the Company.

There is also a General Safety Committee composed of one of the operating officials, either the general superintendent, or his assistant, together with the chief surgeon, the special agent (an attorney-at-law), the safety director, three department superintendents, and a safety inspector for secretary. Safety and kindred matters of a general import that may affect the plant as a whole are taken up by this committee, and where there may be a disagreement as to the recommendations made in a safety requisition, and when a department superintendent takes issue with the Safety Department as to the feasibility of carrying out its suggestion, these matters come up to the General Safety committee for final settlement.

The Safety Department works in complete harmony with the Accident Department which is under the special agent, who also has charge of the Claim Department. The Accident Department sends a daily report to the Safety Department of the

accidents of the preceding day, by departments, and also forms showing the history in a concise manner of each accident. These reports are thoroughly investigated to see if the accidents were avoidable and to fix the responsibility. The inspector who makes this investigation recommends means to eliminate the danger of the accident and, when responsibility is fixed, recommendation is made for the discipline or discharge of the careless workmen, who may have caused an injury to himself or fellow workman.

Material assistance is given the Safety Department in its

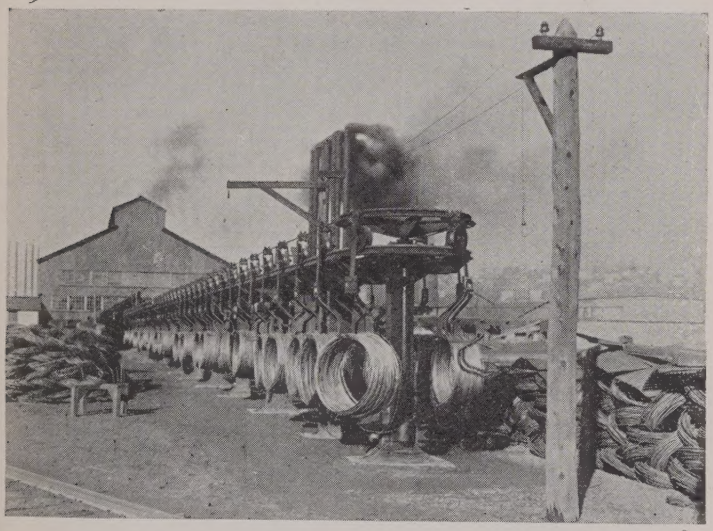


Fig. 3.—Rod and wire cooling conveyor; sheave wheels are all Protected.

work by department foremen's committees. These are appointed in the various departments by the superintendents. These commitees report directly to the department superintendent, who in turn submits the reports, with their endorsements, to the Safety Department for action.

Inspections are made daily by safety inspectors, who cover the entire plant once each week. The property of the Company is divided into two sections and for one week an inspector will work the one section and the next week the other. One night each week is spent in the mill by each inspector.

Safety recommendations are made to the safety director, who approves or disapproves them. Those approved are given a serial number and are typewritten on a triplicate form. The original is sent to the general superintendent for his approval or disapproval. If the requisition is not approved by the general superintendent, it is returned to the Safety Department

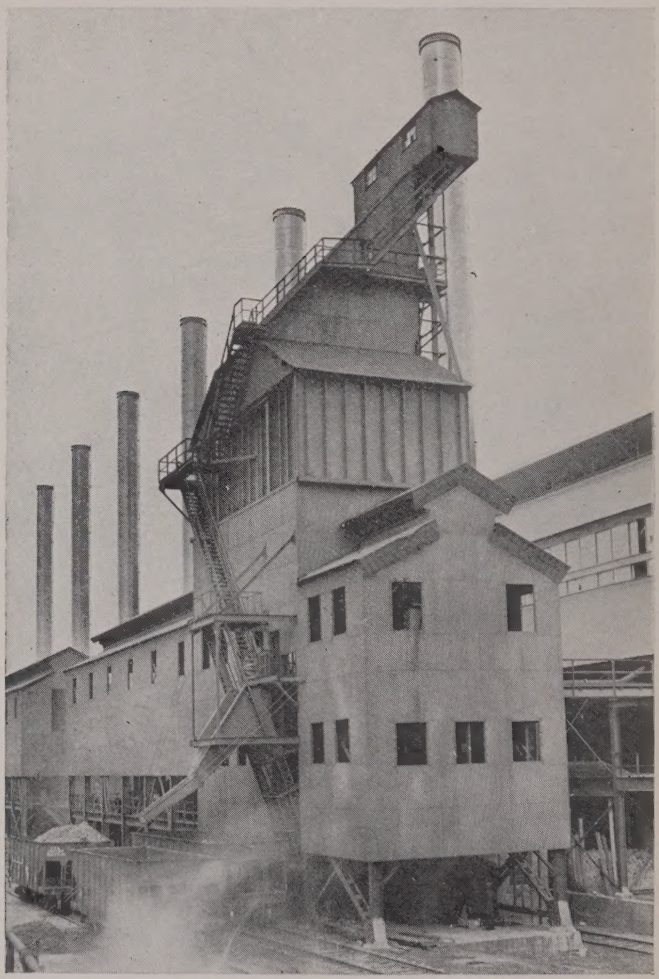


Fig. 4.—Coal Crushing plant for gas producer; all walks and stairways guarded.

and, with duplicate and triplicate, is marked void and placed in the closed file. If the requisition is approved, when received by the Safety Department it is placed in an open file and the dupli-

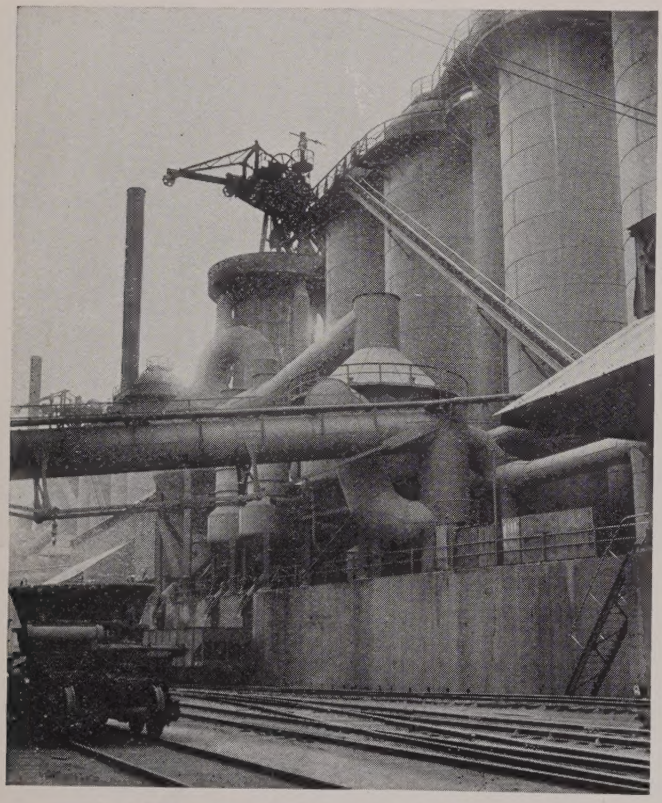


Fig. 5.—A well protected blast furnace.

cate and triplicate forms are sent to the superintendent of the department affected, such additional notes as may have been made by the general superintendent being added. Matters involving the expenditure of a considerable sum of money or recommendations that require any extensive changes in work methods are first taken up with department superintendents so that there may be no friction in the execution of safety work.

Full and complete records are kept by the Safety Department of all requisitions and by this means a close check is maintained upon those still open. When a requisition is returned to

the Safety Department as completed, the original is placed with the triplicate form, which has been returned by the department superintendent, and upon which is noted what action he has

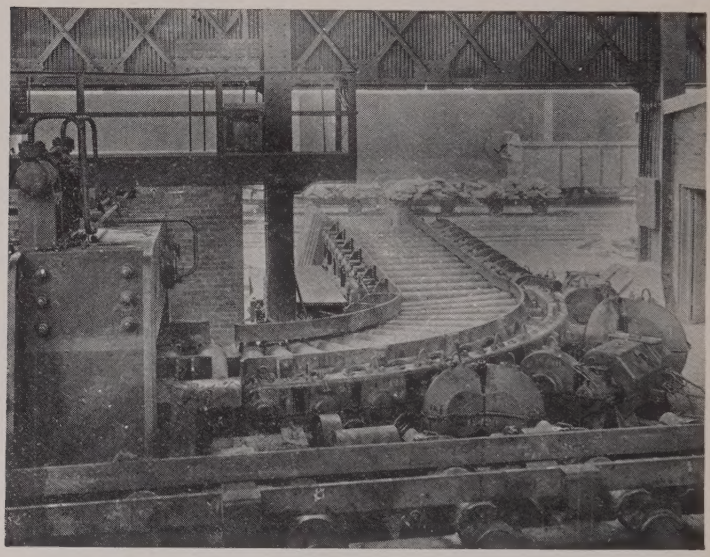


Fig. 6.—Run-out table, No. 2 blooming mill; gearing completely covered.

taken and the date the work was completed. The duplicate is retained for the files of the department superintendent. Returned triplicate forms are referred to the safety inspectors, who make an investigation to see that the work has been done as recommended in the requisition and, upon the receipt of this form from the inspector with his report, the original and triplicate forms are placed in the closed file provided, of course, the work is as recommended. In the event that an investigation discloses that this work is not done according to the recommendation, the matter is called to the attention of the department head, with the request that it be so changed.

Hospital and Medical Staff.

The Youngstown Sheet & Tube Company maintains two emergency hospitals for first aid dressings. One of these is in the main plant, the other at the rod and wire and conduit plants. As soon as a man is injured, no matter how slight the injury

may be, he is given a form made out by his foreman and requested to report at the emergency hospital for treatment. Here a complete record of his case is made on forms provided and, if

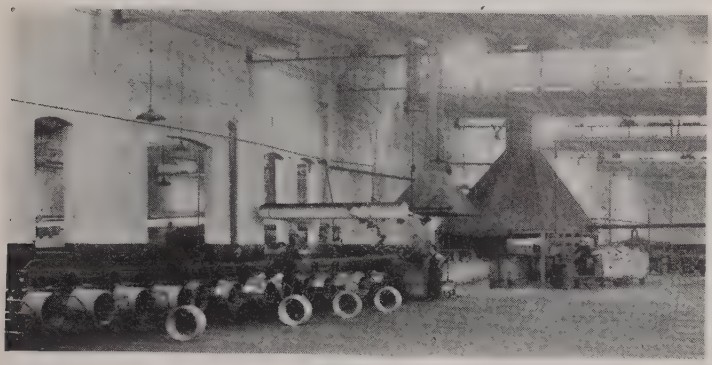


Fig. 7.—Galvanizing wire in the rod, wire and conduit department—The clear floor space around the machines minimizes the possibility of accidents.

he reports for subsequent redressings, note of these is also made on his record sheet. A new and modern hospital is now under course of construction near the North entrance to the main works that will give added facilities for the care and welfare of the employes.

The Medical Department is in charge of a chief surgeon who devotes his entire time to Company work. He has under him an assistant surgeon on full time, two male and three female nurses, who are on duty covering the entire 24 hours, and plans have been matured to have in addition three female nurses for service in the hospitals. Physical examinations are made of all persons who apply for employment and an examination of all employes who entered the service prior to the time that the physical examination was instituted is being made as rapidly as conditions permit. Employes whose injuries are of a dangerous character are sent to the city hospital, where a ward is maintained for the use of company employes.

In addition to the company surgeon, there is employed a specialist in eye, ear and throat work. When an employe finds that a piece of foreign matter has entered his eye, he is prohibited by the company rules from attempting to remove it himself, or to permit anyone else, except the nurse at the hospital, to do so for him. This rule is necessary, to avoid the ever pres-

its own ambulance service, having a motor, a horse-drawn ambulance and a buggy, the last of which is used to reach points that are difficult of access by the larger vehicles and to handle less important cases.

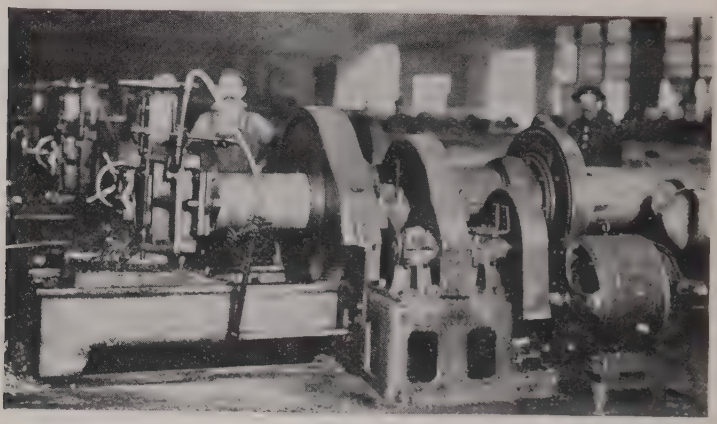


Fig. 10.—Guards on tube mill cutting machines.

Fire Prevention.

Fire reports are required from superintendents of departments for every fire that originates in the plant, from whatever source, no matter how trivial the damage may be. A card record is kept of all these fires, also of all fire extinguishers, hose houses and fire hydrants. The record of the extinguisher shows the make, when purchased, when tested and inspected. Soda and acid extinguishers are required to be refilled and inspected at least once in six months. Pyrene extinguishers are refilled as soon as used. All hose-houses are visited on the first trip of each patrolman on whose beat they are located, both day and night, the fire fighting equipment is inspected, and a report of its condition is made by each patrolman. Hose-houses are provided with incandescent electric lamps that light automatically when the doors are opened. Patrolmen are instructed to watch for unsafe and dangerous places, and for workmen who are careless or indifferent, and to assist in the care of injured workmen and at fires.

Educating Foreign Laborers.

As can be imagined, the difficulty of the proper safe-guarding of the 9,000 employes, who work in three separate plants, is

no small undertaking and, besides the operating difficulties, there are other difficulties encountered, especially labor conditions which are general in the iron and steel industry. For instance,

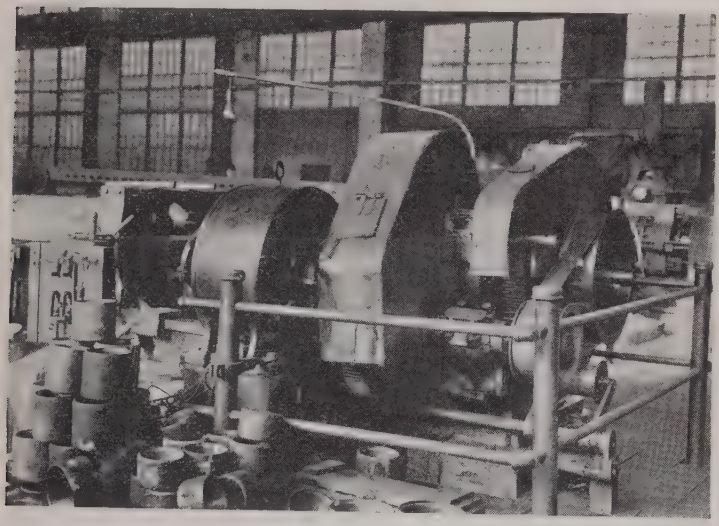


Fig. 11.—Guards and rail around motor-driven pipe-threading machine.

the large percentage of employes of foreign birth (71 per cent. in our case), who go to make up the total of the pay roll, is a problem that requires constant watchfulness and care. When first employed, the foreign workmen may have been in this country but a few weeks and, in times when the mills are working to full capacity, it is more often days than weeks since the newly employed workman landed at Ellis Island. As is to be expected, it is the exception to find one of these men who can read, speak or understand a word of English. This means that the services of several interpreters are required. These interpreters are used to explain to the new employe the dangers of the work to which he may be assigned, and to secure the necessary data for his record of employment. Too often these men must be sent to work before the company interpreter can make a full and complete explanation to them, and these duties then devolve upon the foreman, who may be able to speak the new employes' language imperfectly or not at all.

The employment office maintained by the company is located at its main entrance and there is a large sign, painted in English and several foreign languages, telling the men that the company will employ only such men as are careful and willing to be careful of the safety of other employes. The fact that the various plants of The Youngstown Sheet & Tube Company are located near the main lines of travel between the Atlantic sea coast, where these new comers land, and the factories and farms of the great West and Middle West, makes these mills the stopping point of many newly-landed immigrants. Not only must this

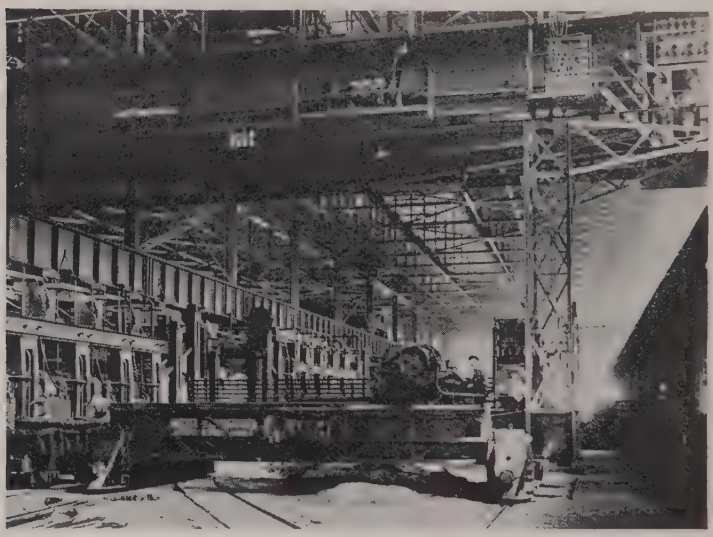


Fig. 12.—Open hearth charging crane and overhead crane, magnetic control, dynamic brakes and safety limit stops.

company give these workmen their first lessons in industrial training, but it must also educate them in English and safety work.

It is these factors that make the educational part of safety work so difficult in an organization as large as that of The Youngstown Sheet & Tube Company. This may be realized somewhat when it is noted that this company employs workmen of 23 nationalities, speaking about 42 distinct dialects.

Specific Devices.

The multitude of safe-guards that are used in the various plants of The Youngstown Sheet & Tube Company, precludes a detailed description of each. A few of them, however, are shown in the accompanying illustrations. Those important devices in the adoption of which this company has been a pioneer or at least amongst the earliest of users are given in the following list:

1—The trolley bar, replacing the trolley wire for crane runways.

2—Magnetic control of all motors on cranes, making it impossible to abuse the crane or the motors by connecting the latter directly across the line.

Fig. 13.—One of nine locomotive cranes equipped with electro-magnets.

3—The "Youngstown Safety Limit Stop" to prevent hooks from overloading and to stop hooks within an inch of travel in either direction by dynamic brake, when either light or loaded.

4—The dynamic braking method for ladle cranes, doing away with the troublesome mechanical brake.

5—The electric magnet for handling billets, pig iron and scrap.

6—Covered gears over truck wheels and on overhead cranes.

Signs, Publications and Lectures.

The company has a book of safety rules printed in English only, and a separate book of rules for crane operators. In addition to these books, there are a great number of safety and danger signs posted throughout the works, but these are simply incidental in the educational project, the main effort being to teach the workmen to be on the lookout for dangerous places and not always to look for a sign that will warn him of such places; in other words to train the employe to use his wits and be observant. Besides the permanent signs within the works

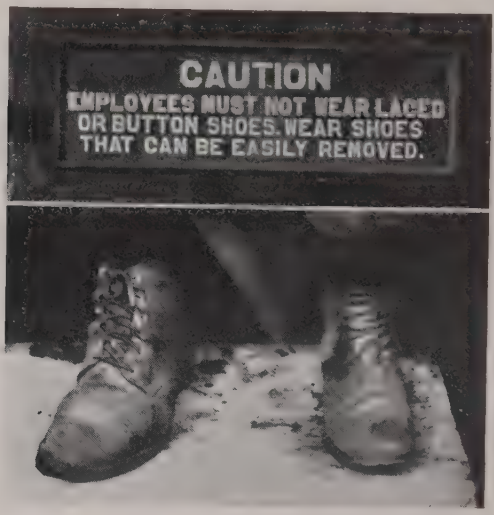


Fig. 14.—The wrong and right kind of shoes for foundrymen.—The sign is prominently displayed in the foundry.

there are at the entrances electrical signs which display mottoes that are changed weekly. These signs and slogans are painted in foreign languages in addition to the English. "Safety First" display cases are provided at the main entrances and at prominent points in the works. These cases are filled with photographs, drawings, cartoons, clippings, slogans, etc. They are arranged in an attractive manner and are frequently changed, so that a

new set of exhibits is on view to keep up the interest of the men. In the promotion of safety and sanitation work, the company has made use of lectures and illustrated talks wherever

Fig. 15.—Protection for the eyes, face and hands in electric arc welding.

Fig. 16.—Ventilating system at the tube-mill furnaces.

possible. In 1911, the head of the American Museum of Safety, as well as the head of the iron and steel section of this Museum gave lectures to the workmen.

Sanitation.

The sanitation is looked after by a special corps of men who scrub the latrines twice a day. These buildings are all provided with modern toilet facilities, are thoroughly screened, and are kept painted and in good general condition. Individual paper towels are supplied instead of the cotton or linen formerly used.

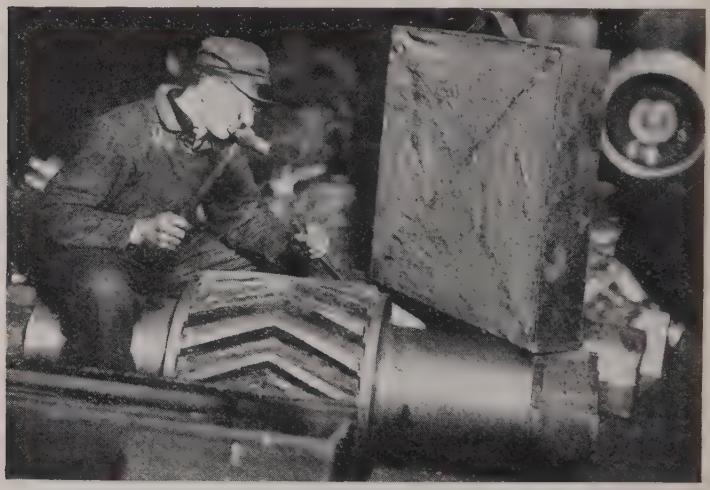


Fig. 17.—Chipping—The goggles and screen protect both the workman and his neighbors.

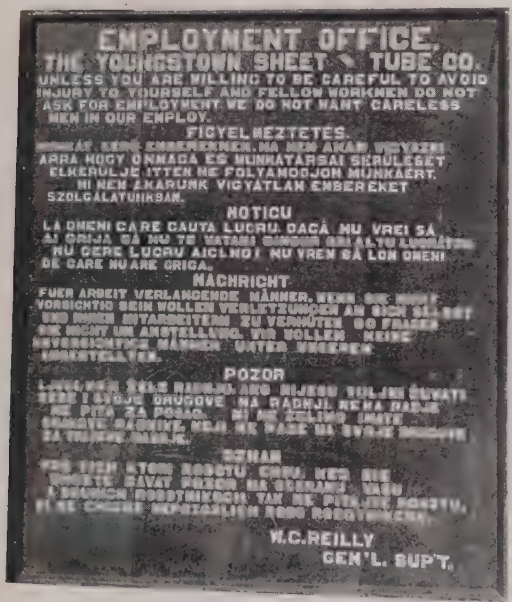
Drinking water is supplied from drilled wells, that are sunk several feet into bed rock and frequent bacteriological and chemical analyses are made of the water of each well. A fountain system has been planned to include all the various departments so that water at an even temperature will be supplied to the employes in the mills, thus doing away with water buckets, coolers and other methods of cooling and supply water.

Waste cans are provided throughout the mills for the deposits of rubbish, refuse, and the remains of lunches. A special corps of men are constantly at work in the mills and yards, to keep them in good condition.

Open overhead fans are used to cool the puddle mills while tube mills, rod and wire mills and open hearths are provided with air by conduit systems.

Welfare Projects.

The welfare of employes enters directly into many company transactions; for instance, requisitions for machinery made by the purchasing department require that all proper safeguards must be furnished, and state that this feature will be taken into consideration in making purchases. This has been a standard rule of the company for more than three years. Also the regular


EMPLOYMENT OFFICE.
THE YOUNGSTOWN SHEET & TUBE CO.
UNLESS YOU ARE WILLING TO BE CAREFUL TO AVOID INJURY TO YOURSELF AND FELLOW WORKMEN DO NOT ASK FOR EMPLOYMENT. WE DO NOT WANT CARELESS MEN IN OUR EMPLOY.
FIGYELMEZTETES.
ARRA HOGY ONNAGA ES MUNKATARSAI SERULESET ELKERULJE. ITTEN NE FOLYAMODJON MUNKAERT. MI NEM SZERUNK VIGYATLAN EMBEREKET SZOLGALATUNKBAN.
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NACHRICHT
M.C.REILLY
GEN'L. SUP'T.

Fig. 18.—Sign erected near the main gate-

medical examination of employes has been of special benefit in showing the men where they are in need of medical attention and the particular things they should have looked after. Within the works the employe is regarded wherever there is a possibility of danger—foundry workers are required to wear congress shoes which are supplied at cost to such as need them, carpenters, painters, linemen, riggers and sailors are provided with rubber shoes for use on loose or slanting surfaces; and in addition

to these and many other such safe-guards, three pulmotors and a self-rescue outfit have been placed in the plant, which have been called into use a number of times, having proven their value long since by saving several lives that might otherwise have been lost.

Welfare projects have not been confined to working hours and the interior of the works by any means. Flower beds are scattered through the mills, and add cheerfulness to the work, giving a touch of beauty to a business that is at best dirty and unattractive. These flower-beds have been found to have a tendency to make the men want to keep the yards and shops cleaner than was the case without them. Also inspection of the home and living conditions has been begun as well as an attempt to clean up houses or homes found in bad sanitary condition, overcrowded or otherwise for habitation.

Conclusion.

Activity for the safety, health and welfare of its employes has developed in this Company a large and well established department which is as yet by no means perfect but which has for its immediate and ultimate aim the best interests of the individual workman. To this end, in addition to its own plans, suggestions are always gladly received and a committee meets monthly to consider such as are submitted, cash awards being made for suggestions which are regarded as of sufficient merit. Also the Safety Department is always glad to answer letters of inquiry from any source and furnish any information in its power.

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